

## ABSTRACT

An implant (1) to be implanted in bone tissue, e.g. a dental implant or an implant for an orthopedic application, comprises surface regions (4) of a first type which have e.g. osseointegrative, inflammation-inhibiting, infection-combating and/or growth-promoting properties, and surface regions (8) of a second type which consist of a material being liquefiable by mechanical oscillation. The implant is positioned in an opening of e.g. a jawbone and then mechanical oscillations, e.g. ultrasound is applied to it while it is pressed against the bone. The liquefiable material is such liquefied at least partly and is pressed into unevennesses and pores of the surrounding bone tissue where after resolidification it forms a positive-fit connection between the implant and the bone tissue. The surface regions of the two types are arranged and dimensioned such that, during implantation, the liquefied material does not flow or flows only to a clinically irrelevant degree over the surface regions of the first type such enabling the biologically integrative properties of these surface regions to start acting directly after implantation. The implant achieves with the help of the named positive fit a very good (primary) stability, i.e. it can be loaded immediately after implantation. By this, negative effects of non-loading are prevented and relative movements between implant and bone tissue are reduced to physiological measures and therefore have an osseointegration promoting effect.

(Fig. 1)